

REMARKS

Claims 22-42 are pending. By this Amendment, claims 27, 32, and 42 are amended and claim 38 is cancelled. No new claims are added.

Specification

The brief description of the drawings has been amended to add a brief description of Fig. 17. No new matter has been added.

The detailed description of the invention has been amended to further describe new Figure 17 by including disclosure contained in the Summary of the Invention at page 9, lines 5-17. Reference numerals corresponding to features of the invention specified in the claims were added. The detailed description of the invention has also been amended to correct minor informalities that occurred during translation from the original German. No new matter has been added.

Drawings

Figure 17 has been submitted as a new sheet. A mirror well is shown with reference numeral 7 and first-surface mirrors are shown with reference numeral 8. Support for the mirror well 7 and first-surface mirrors 8 of Figure 17 can be found in the application as filed, for example, at page 9, lines 5-17.

Claims Rejections – 35 U.S.C. § 112

Claims 22-42 stand rejected under 35 U.S.C. § 112, first paragraph as failing to comply with the enablement requirement. Claim 42 also stands rejected under 35 U.S.C. § 112, second paragraph as being indefinite for failing to particularly point out and distinctly claim the subject matter which Applicant regards as the invention. Applicant respectfully traverses the rejections for the reasons set forth below.

In rejecting claims 22-42 under 35 U.S.C. § 112, first paragraph, the Office Action provides that “[t]he specification and claims fail to teach how ... the three[-]dimensional image [could] be seen by simply moving the position of the diffusing layer.” (Office Action dated July 2, 2007 (the “Second OA”) at 3.) In relation to claim 37, the Office Action further provides that “it is impossible to create [a] three-dimensional image [for] viewing [if] the display device and filter array [have] a distance that is zero.” (Id.)

The Examiner incorrectly assumes that the diffusing layer is responsible for creating the stereopsis effect necessary for three-dimensional viewing by an observer. Specifically, the Office Action states that “[t]he image light directivity (i.e. to right eye and left eye respectively) will not be *established* by moving a diffusing layer around.” (Id. (emphasis added).) In fact, the application discloses a three-dimensional image that is established by a filter array, not a diffusion layer. As such, it is the filter array that imparts structure to light originating from the illuminating device to create directionality of light directing one image to the right eye and a second image to the left eye. In other words, the image light directivity is not established through movement of the *diffusion layer*, but by the *filter array*. Movement of the diffusion layer, in fact, has a completely different effect. When the diffusion layer is spaced apart from the

from the filter array, the diffusion layer essentially interferes with the directivity of light that is created by the filter array to create a three-dimensional image. Specifically, at a certain distance z from the filter array, the diffusion layer *cancels* the image light directivity already established by the filter array. (See, e.g., Application at page 15, lines 2-17, page 17, lines 4-28.) Therefore, Applicant respectfully requests that the Examiner withdraw the rejection.

In relation to claim 37, Applicant regrets any confusion resulting from previous remarks concerning amendments which were not properly made to claim 37. Claim 37 is allowable because it is the filter array, rather than the diffusion layer, that is responsible for creating a three-dimensional image. This means that the directivity of light needed for three-dimensional viewing is created between the illuminating device and the filter array rather than between the display device and the filter array. (See, e.g., Fig. 1.) Therefore, it is entirely possible to create three-dimensional image viewing for the display device even if the distance between the display device and the filter array is zero.

In rejecting claim 42 under 35 U.S.C. § 112, second paragraph, the Office Action provides that “the phrase ‘filter array’ ... is confusing and indefinite since the claim fails to give a proper antecedent basis for this filter array from [the] earlier part of the claim.” (Second OA at pg. 4.) The Office Action also provides that “[i]t is not clear how ... this filter array structurally relate[s] to other elements of the claim.” (Id.) By this Amendment, Applicant has amended claim 42 to recite a filter array arranged intermediate the light source and the transmissive image display device. As amended, claim 42 provides proper antecedent basis for the phrase “the filter array” and shows how this filter array structurally relates to other elements of the claim. Therefore, Applicant respectfully requests that the Examiner withdraw the rejection.

Claim Objections

Claim 38 stands objected to under 37 CFR § 1.75(c) as being of improper form for failing to further limit the subject matter of a previous claim. Claims 23-30 and 32 stands objected to based upon informalities in the claim language.

By this Amendment, claim 38 has been cancelled. Therefore, the objection to claim 38 under 37 CFR § 1.75(c) is moot.

The Office Action provides that it is not clear how the mirror well of previously presented claim 22 relates to the transparent substrate of the filter array claimed in claims 23-30. Applicant respectfully submits that new Figure 17 shows how the mirror well structure relates the transparent substrate of the filter array claimed in Figures 22-30. Support for how the mirror well structure relates to the transparent substrate of the filter array is found throughout the specification, such as, for example, at page 9, lines 5-17. Therefore, Applicant respectfully requests that the Examiner withdraw the objection.

The Office Action also provides that “[t]he phrase ‘permanently diffusing’ recited in claim 32, is confusing and indefinite since it is not clear what is considering [sic] to be ‘permanently’ diffusing[.] Being ‘permanently’ confusing as compared to what?” (Second OA at pg. 5.) By this Amendment, Applicant has amended claim 32 to recite that the diffusing layer is designed to be permanently *light*-diffusing. Support for this amendment is found at page 17, lines 26-28 of the specification. As amended, claim 32 provides what is considered to be “permanently” diffusing (the *diffusing layer* is designed ...) and in relation what (... to be permanently *light*-diffusing). Therefore, Applicant respectfully requests that the Examiner withdraw the objection.

Claim Rejections – 35 U.S.C. § 103

Claims 22, 40, and 42 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent No. 6,157,424 to Eichenlaub (“Eichenlaub”) and U.S. Patent No. 6,527,410 to Yamaguchi (“Yamaguchi”). The rejections are respectfully traversed for the reasons set forth below.

Claims 22 and 42 recite a mirror well that is arranged to surround a filter array to facilitate virtual homogenous enlargement of the filter array. The Office Action asserts that Yamaguchi teaches a mirror well that is arranged to surround a backlight section and a filter array. (See Second OA at 6.) Neither this disclosure, nor any other disclosures in Eichenlaub or Yamaguchi, however, teach or suggest a mirror well that is arranged to surround a filter array to facilitate virtual homogenous enlargement of the filter array.

Yamaguchi discloses a diffuse reflector rather than a specular reflector. One skilled in the art will recognize that a specular reflector reflects light in a single direction to create a mirror image, such as a virtual homogenous enlargement of the light source. In contrast, a diffuse reflector reflects lights in multiple directions such that an illuminating surface, rather than a homogenous surface, is created (i.e., a “white wall”). Referring to Figure 1 of Yamaguchi, a diffuse reflecting layer (reference numeral 24a) is shown as surrounding the light sources (reference numeral 26). The diffuse reflecting layer of Yamaguchi does not, however, surround the directivity regulating member (reference numeral 15). In addition, the diffuse reflecting layer of Yamaguchi teaches away from the reflection of light of the illuminating device to facilitate virtual enlargement. Specifically, the diffuse reflecting layer of Yamaguchi teaches the reflection of light to facilitate diffusion. For example, the materials identified by Yamaguchi as examples of what can be used to form the diffuse reflecting layer – alumina (Al_2O_3) and titanium oxide (TiO_2) – are known by one of skill in the art to create a diffuse reflector and will not effect virtual enlargement. These materials of the light source, as well as other material having diffusive properties, are instead known to spread out light from a single source to give the appearance that the light has originated from many sources (i.e., to achieve a diffusive effect).

Therefore, claims 22 and 42 are allowable. Claims 23-41, which depend from claim 22, are also allowable for at least the same reasons. The rejections of claims 23-41 are traversed but not expressly argued in view of the allowability of the underlying base claim.

Conclusion

In view of the foregoing, it is submitted that this application is in condition for allowance. Favorable consideration and prompt allowance of the application are respectfully requested.

The Examiner is invited to telephone the undersigned if the Examiner believes it would be useful to advance prosecution.

Respectfully submitted,

A handwritten signature in black ink, appearing to read 'Douglas J. Christensen', written in a cursive style.

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